ASSEMBLY AND OPERATION INSTRUCTION MANUAL

VIKING ADVENTURER

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WASECA, MINNESOTA, U. S. A.

CONTENTS

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INTRODUCTION TO ASSEMBLY DETAILS FOR THE JOHNSON VIKING ADVENTURER TRANSMITTER

The care with which any piece of equipment is built determines, to a large extent, the satisfaction and value which can be derived from its use. Follow each step of the assembly details carefully and completely before performing the indicated operation, rereading any step which may not be immediately clear. Refer to the illustrations whenever a doubt about dressing and training leads, or the positioning of a component arises.

Avoid "rosin" or "cold" solder connections by using a clean hot iron, using a good rosin core solder and by holding the iron against the connection long enough so that the solder flows freely around the wire or terminal. Make certain all screw and nut electrical connections are clean and tight. Use Shakeproof lockwashers whenever they are called for in the text.

The Viking Adventurer has been packaged for the convenience of the builder. Check the kit parts against the packing slip, consulting the listing on each package to identify the components and hardware. Do not remove hardware or components from the packages until they are recognized and can be kept sorted for easy access.

A nominal list of tools for assembly of the Adventurer should include a good soldering iron, two screwdrivers (1/4" wide and 1/8" wide blades), a knife, long nose pliers, diagonal cutters and a ruler.

REMEMBER that HIGH VOLTAGES appear at several places on the assembled chassis during testing and operation.

JOHNSON VIKING ADVENTURER ASSEMBLY DETAILS

1. Mount rubber grommets G1, G2, G3, G4 and G5 as shown in Figure 1 and Figure 2.

2. Mount X1, an 8 pin octal socket, X6, a 5 point terminal strip, and two solder lugs positioned as shown in Figure 2 using the following hardware at each mounting hole:
   a. 6-32 x 1/4" long screw from the top of the chassis.
   b. Solder lug on front socket mounting screw only.
   c. #6 lockwasher on front socket mounting screw only.
   d. Chassis
   e. #6 lockwasher.
   f. Solder lug on right hand terminal strip mounting screw only.
   g. Socket and/or terminal strip (terminal strip on top of the socket).
   h. 6-32 hex nut.

3. Mount X2, a 5 pin steatite socket, positioned as shown in Figure 2 with hardware at each hole as follows:
   a. 6-32 x 1 3/4" long screw from the top of the chassis.
   b. Chassis.
   c. #6 lockwasher.
   d. 3/8" diameter x 1 1/16" long spacers.
   e. Socket.
   f. #6 lockwasher.
   g. 6-32 hex nut.

4. Mount X3, an 8 pin octal socket, X9, a 2 point terminal strip and one solder lug positioned as shown in Figure 2 with the following hardware at each mounting hole:
   a. 6-32 x 1/4" long screw from the top of the chassis.
   b. Chassis.
   c. #6 lockwasher.
   d. Terminal strip X9 at rear screw only.
   e. Solder lug at front screw only.
   f. Socket.
   g. 6-32 hex nut.

5. Mount X4, an 8 pin octal socket and 2 solder lugs positioned as shown in Figure 1 with the following hardware at each mounting hole:
   a. 6-32 x 1/4" long screw from the back of the chassis.
   b. Chassis.
   c. #6 lockwasher.
   d. Solder lug on each screw.
   e. Socket.
   f. 6-32 hex nuts.

6. Mount X5, an 8 pin octal socket positioned as shown in Figure 3 with the following hardware at each mounting hole:
   a. 4-40 x 3/8" long screw from the front of the chassis.
   b. #4 lockwasher.
   c. Chassis.
   d. Socket.
   e. 4-40 hex nut.

7. Mount fuse holder X15 shown in Figure 2 as follows:
   a. 6-32 x 3/8" long screw from the bottom of the chassis.
   b. Fuseholder.
   c. Chassis.
   d. #6 lockwasher.
   e. 6-32 hex nut.

8. Mount X14, a 3 point terminal strip, shown in Figure 2 with the following hardware at each mounting hole:
   a. 6-32 x 1/4" long screw from the top of the chassis.
   b. Chassis.
   c. Terminal strip.
   d. #6 lockwasher.
   e. 6-32 hex nut.

9. Mount X13, a 3 point terminal strip, shown in Figure 1 with the following hardware at each mounting hole:
   a. 6-32 x 1/4" long screw from the back of the chassis.
   b. Chassis.
   c. Terminal strip.
   d. #6 lockwasher.
   e. 6-32 hex nut.

10. Mount X12, the antenna connector, shown in Figure 1 with the following hardware at each mounting hole:
   a. 6-32 x 1/4" long screw from the back of the chassis.
   b. Chassis.
   c. #6 lockwasher.
   d. Antenna connector. Position the ground terminal toward the center of the chassis.
   e. 6-32 hex nut.

11. Assemble the ground terminal shown in Figure 1 as follows:
   a. 6-32 x 3/8" screw from the inside of the chassis.
   b. Solder lug.
   c. #6 lockwasher.
   d. Chassis.
   e. #6 lockwasher.
   f. 6-32 hex nut, tighten securely.
   g. 6-32 hex nut finger tight.

12. Mount X10, a steatite cone insulator, shown in Figures 2 and 4 as follows:
   a. 6-32 x 1/4" long screw from the bottom of the chassis.
   b. #6 lockwasher.
   c. Chassis.
   d. Cork washer.
   e. Large end of the cone insulator.

13. Mount slide switches SW1 and SW2 shown in Figure 3 with the following hardware at each mounting screw. The contacts on these switches are symmetrical, therefore it makes no difference which end is up or down. (The terminal numbers shown in Figure 3 identify the contacts for wiring after the switch is mounted on the chassis).
   a. Insert the switches through the rectangular holes from the front of the chassis.
   b. 4-40 x 3/8" long screw from the front.
   c. Switch.
   d. Chassis.
   e. #4 lockwasher.
   f. 4-40 hex nut.

14. Mount filter choke LP1 shown in Figure 6 with the following hardware at each mounting hole:
   a. 6-32 x 1/4" long screw from the top.
   b. Filter choke foot.
   c. Chassis.
   d. #6 lockwasher.
   e. 6-32 hex nut.

15. Assemble two spade screws on L1, the oscillator coil (the coil wound on a ceramic form with the smaller diameter wire) as follows:
    a. 6-32 x 1 1/2" long screw from side of coil opposite the coil terminals.
    b. Solder lug (positioned so it will point toward the front, refer to Figure 4).
    c. #6 lockwasher.
    d. Spade screw.
    e. Fiber washer.
    f. Coil.
    g. Fiber washer.
    h. Spade screw.
    i. #6 lockwasher
    j. Solder lug (positioned so it will point toward the rear, refer to Figure 4).
    k. 6-32 hex nut. Do not tighten excessively or ceramic form may be broken.
16. Mount L1, the oscillator coil in the position shown in Figure 4 with the following hardware at each screw:
    a. Coil on the top of the chassis with the coil terminals toward the center of the chassis.
    b. Chassis.
    c. #6 lockwasher.
    d. Solder lug, on the screw toward the center of the chassis, positioned so it points toward the front.
    e. 6-32 hex nut.

17. Assemble L4, the amplifier coil as follows: (The coil wound on a ceramic form with the larger wire size).
    a. 6-32 x 1 1/2" long screw from the side opposite the terminals
    b. Solder lug pointing toward the front (refer to Figure 4).
    c. #6 lockwasher.
    d. Spade screw.
    e. Fiber washer.
    f. Coil.
    g. Fiber washer.
    h. Spade screw.
    i. #6 lockwasher.
    j. 6-32 hex nut. Do not tighten excessively or ceramic form may be broken.

18. Mount L4, the amplifier coil in the position shown in Figure 4 with the following hardware at each screw:
    a. Coil on the top of chassis with coil terminals toward the center of the chassis.
    b. Chassis.
    c. #6 lockwasher.
    d. Solder lug, on each spade screw, positioned so they point toward the rear.
    e. 6-32 hex nut.

19. Mount the front panel on the chassis by means of a pilot light and key jack using the following sequence:
    a. For the pilot light (located between switches SW1 and SW2).
        (1) Pilot light jewel on front of the panel.
        (2) Front panel.
        (3) 3/32" thick spacer washer.
        (4) Chassis.
        (5) Pilot light bracket and socket assembly positioned as shown in Figure 3.
        (6) Hex nut (7/16-27). Do not tighten.
    b. For the key jack (located on the left side of the front panel).
        (1) Key jack on the inside of the chassis positioned as shown in Figure 3.
        (2) Chassis.

(3) 3/32" thick spacer washer.
(4) Front panel.
(5) 1/64" thick flat washer.
(6) Hex nut (3/8-32).
Tighten nuts in steps a and b above, securely.

20. Mount bandswitch, SW4, positioned as shown in Figure 4 with the contacts on the front wafer toward the oscillator coil L1, and the contacts on the rear wafer toward the amplifier coil L4, with the following hardware sequence:
    a. Switch behind the front panel.
    b. 3/8" lockwasher.
    c. Front panel.
    d. 1/64" thick flat washer.
    e. Hex nut (3/8-32).

21. Mount variable condenser C4, a single end frame condenser as follows:
    a. Condenser from the rear positioned as shown in Figure 4.
    b. 3/8" lockwasher.
    c. Front panel.
    d. 1/64" thick flat washer.
    e. 3/8-32 hex nut.

22. Refer to Figure 4 for the position and identification of variable condensers C10 and C11, switch mounting plate CH5 and switch SW3. Assemble these as follows:
    a. Orient the switch mounting plate so the holes in it are in line with the corresonding holes in the front panel.
    b. Position switch SW3 between the front panel and the switch mounting plate with the switch contacts toward the rear.
    c. Condenser C10 from the rear as shown in Figure 4.
    d. Switch mounting plate.
    e. Front panel.
    f. 1/64" thick flat washer.
    g. 3/8-32 hex nut finger tight only.
    h. Condenser C11 from the rear as shown in Figure 4.
    i. 6-32 x 1/4" long screw and #6 lockwasher from the front.
    j. Tighten the hex nut and the screw securely, thus clamping SW3 against the panel.

23. Mount meter M1 on the front panel as follows: (Note: The mounting hardware for the meter is packed with the meter).
    a. Screws from the front.
    b. Meter.
    c. Lockwashers (between the meter and the front panel).
    d. Front panel.
    e. Hex nuts.

24. Assemble one of the large solder lugs on each of the meter terminals. Position the solder lugs so they extend downward and tighten the nuts securely.

25. Cut the leads on C21, a .005 mfd ceramic disc condenser, 1" long and connect one lead to each of the solder lugs assembled to the meter in step 24. Do not solder.

NOTE: Unless otherwise specified, the insulation on all wires is to be stripped 5/16" from each end for connecting to the terminals (wire lengths given include this 5/16" at each end). Solder only when instructed to do so.

Refer to Figure 4 for the location of components, terminal designations and wiring on the top side of the chassis.

26. Connect Y1, a 5 5/8" wire, from the solder lug at the negative terminal of the milliameter to terminal #5 on switch SW2 as shown in Figures 3 and 4. Train this wire through grommet G4 directly below the meter. Solder at both ends.

27. Connect Y2, a 6" wire, from the solder lug at the + terminal of the milliameter to terminal #2 on switch SW2. Train this wire over to Y1 and parallel to it down through grommet G4 to the switch. Solder at both ends.

28. Connect Y3, a 1 1/4" wire, from the rotor terminal of C4 to the near solder lug of L1. Solder at both ends.

29. Connect Y4, a 9 1/2" wire, to terminal #8 of SW4A. Train this wire through grommet G4 near the front panel and back to terminal #3 of X6. Refer to Figure 3 for the position of this wire on the underside of the chassis. Do not solder.

30. Cut the leads on C7, a .005 mfd ceramic disc condenser, 1/2" long and connect to terminal #8 of switch SW4A and the near solder lug at L1. Solder at the solder lug only.

31. Connect Y5, a 2 1/4" wire, from terminal #1 of L1 to the near stator terminal of condenser C4 as shown in Figure 4. Solder at the condenser only.

32. Connect Y6, a 1 1/4" wire, from contact #11 of SW4A to terminal #2 of L1. Solder only at SW4A.

33. Connect Y7, a 1 5/8" wire, from contact #10 of SW4A to terminal #3 of L1. Solder both ends.

34. Connect Y8, a 2 3/4" wire, from contact #9 of SW4A to terminal #4 of L1. Solder both ends.

35. Connect Y9, a 3 7/8" wire, from contact #8 of SW4A to terminal #5 of L1. Solder at switch only.

36. Connect R13, a 2700 ohm 1 watt resistor, (color code red, violet, red, silver) with leads cut 1" long, between terminals 2 and 5 of coil L1. Solder at both ends.

37. Connect Y10, a 4 1/2" wire, to terminal #1 of L1 and solder. Train this wire through grommet G3 directly below. (This wire will be connected to pin #8 of socket X3 later.)

38. Connect Y11, a 2" wire, from terminal #1 of coil L4 as shown in Figure 4 to the stator terminal of condenser C10. Solder only at the coil.

39. Connect Y12, a 1 3/4" wire, from contact #5 of switch SW4B to terminal 2 of L4. Solder both ends.

40. Connect Y13, a 1 5/8" wire, from contact #4 of SW4B to terminal 3 of L4. Solder at both ends.

41. Connect Y14, a 1 5/8" wire, from contact #3 of SW4B to terminal 4 of L4. Solder both ends.

42. Connect Y15, a 1 7/8" wire, from contact #2 of SW4B to terminal 5 of L4. Solder both ends.

43. Connect Y16, a 2 3/8" wire, from contact #1 of SW4B to terminal 6 of L4. Solder only at the switch.

44. Connect Y17, a 2 1/4" wire, from terminal 6 of L4 to the near stator terminal on condenser C11. Solder at both ends.

45. Connect Y18, a 2" wire, from terminal #6 on switch SW3 to the nearest stator terminal on C11. Solder at both ends.

46. Assemble the following mounting hardware at each mounting hole on shield CH2: Since this shield is symmetrical either end may be toward the front of the transmitter. Refer to Figure 6 for the identification of CH2 and its location on the chassis.
    a. 6-32 x 1/4" screw inserted from the outside surface of shield toward the center of the chassis.
    b. Solder lug on one mounting screw only. Position the lug pointing up.
    c. #6 lockwasher on the screw with the solder lug.
    d. Shield.
    e. #6 lockwasher.
    f. #6 spade screws.
    g. 6-32 hex nut.

47. Cut the leads on C12, a .0007 mfd rectangular mica condenser, to 1 1/8" long. Connect and solder one end to the solder lug on the shield CH2.

48. Mount CH2 shown in Figure 6 with the following hardware on each screw:
    a. Shield from the top of the chassis with condenser C12 to the front of the transmitter.
    b. Chassis.
    c. #6 lockwasher.
    d. X7, a two terminal, terminal strip on the rear screw positioned as shown in Figure 2.
    e. 6-32 hex nut.

49. Solder the free end of C12 to terminal #5 of SW3.

50. Connect Y19, a 1 1/4" wire, from the rotor terminal of condenser C10 to the solder lug at the bottom of L4. Solder at the solder lug only.

51. Connect Y42, a 3 3/8" wire, from the rotor terminal on condenser C11 to the rotor terminal on condenser C10. Solder both connections.

52. Assemble three solder lugs under the screw at the top of insulator X10. Fan these out, so one points toward condenser C10, one toward coil L1 and the third toward the center of the chassis.

53. Cut the leads on C9, a .0003 mfd mica condenser 3/4" long and connect between the stator terminal of C10 and the solder lug on X10 pointing toward condenser C10. Solder both ends.

54. Solder the short lead of parasitic choke L3 (an 8 turn coil wound on a 100 ohm resistor) to the tube plate cap TC.

55. Cut the long lead of L3 to a length of 2 3/4" and solder to the solder lug on X10 which points toward L1.

56. Cut one lead on RFC1 to 3/8" length and cut off the other lead next to the eyelet. Connect Y20, a 3" wire, to the end of the RFC with no lead. Cut the leads of C17, a .001 mfd disc ceramic condenser 1/2" long and connect and solder one end to the end of the RFC to which wire Y20 has been connected.

57. Solder the 3/8" lead on RFC1 to the remaining solder lug on insulator X10 and train wire Y20 through rubber grommet G1 and connect to terminal #1 on X6. Also solder the free lead of C17 to the solder lug on the top side of the chassis at socket X1.

58. Train the leads on filter choke LP1 through grommet G1, at socket X1. Cut one lead 1 1/2" long, measured from the grommet, underside of chassis. Strip 5/16" insulation from the end, tin and connect to pin #8 of socket X1. Do not solder. Cut the other lead from choke LP1 3" long measured from the grommet, strip 5/16" insulation from the end, tin and connect to terminal #3 of X6. Do not solder.

59. Connect Y21, a 4 1/4" wire, from pin 5 of socket X3 to pin 4 of socket X2. Train this wire against the chassis, then straight up to terminal 4 of X2 as shown in Figure 2. Do not solder.

60. Strip all the insulation from Y22, a 2 1/4" wire. Connect from pin #1 of socket X3, through pins 2 and 3 to the solder lug under the mounting screw of socket X3. Solder only at pin #1.

61. Connect Y23, a 6" wire, between pin 7 of socket X4 and pin 7 of socket X3. Train this wire so it lays against the chassis as shown in Figure 2. Do not solder.

62. Connect Y24, a 6" wire, between pin #7 of socket X3 and pin 1 of socket X2. Train this wire around the back mounting spacer on socket X2 and up to pin 1 as shown in Figure 2. Keep this wire against the chassis, bringing it straight up to the socket terminals. Solder at pin #7 on socket X3 only.

63. Connect Y25, a 5 3/4" wire, between pin #1 of socket X2 and the pilot light terminal nearer the chassis. Train this wire against the chassis and straight up to the terminals as shown in Figure 2. Solder at the pilot light only.

64. Connect Y26, a 1 7/8" wire, to pin 5 of socket X2 and the solder lug at the chassis directly below. Solder at the lug only.

65. Connect C14, a .005 ceramic disc condenser, between pins 1 and 5 of socket X2. Solder at pin 1. Cut the condenser leads 5/8" long.

66. Connect C6, a .01 mfd ceramic disc condenser, between pins 4 and 5 of socket X2. Solder both ends. Cut the leads 5/8" long.

67. Connect Y27, a 1 3/4" wire, between terminal #1 of switch SW2 and the remaining pilot light terminal. Solder at the pilot light only. (Refer to Figure 3 for the switch terminal numbering.)

68. Connect Y28, a 2 1/8" wire, between terminal 1 of SW2 and the solder lug between G3 and G4 near SW2. Solder at the switch only.

69. Connect Y29, an 8 1/2" wire, between terminal 6 of SW2 and terminal #1 of terminal strip X6. Train this lead parallel to Y4 put on in step 29 as shown in Figure 2. Solder at the switch only.

70. Connect Y30, a 7 3/4" wire, between terminal 3 of SW2 and terminal #2 of X6. Train this lead parallel to Y29 as shown in Figure 2. Solder at switch only.

71. Connect Y31, an 8 5/8" wire, from terminal #2 of terminal strip X6 to pin #5 of socket X4. Train this wire straight to the back of the chassis and along the corner of the chassis over to socket X4 as shown in Figure 2. Do not solder.

72. Connect Y32, an 8" wire, between pin 4 of socket X4 and terminal 3 of terminal strip X6. Train this wire parallel to Y31 as shown in Figure 2. Do not solder.

73. Connect Y33, a 3/4" long bare wire, between pins #4 and #5 of socket X4. Solder both connections.

74. Connect R5, 10 ohm 1/2 watt resistor, (color code brown, black, black, gold) to terminals #1 and #2 of terminal strip X6. Position R5 to the front of X6 and near, but not against the chassis. Cut the resistor leads to 3/4" length. Solder at terminal #1 only.

75. Cut the leads on C8, a .001 mfd disc ceramic condenser 1" long. Connect one end to terminal #5 on X6 and the other end to pin #2 on socket X2. Do not solder.

76. Connect Y34, a 6 1/2" wire, between pin #8 of socket X4 and pin #5 of X3. Train this wire down to the chassis and along the chassis between sockets X2 and X3 as shown in Figure 2. Solder at X4 only.

77. Cut the leads on R1, a 47,000 ohm 1/2 watt resistor (color code yellow, violet, orange, silver) 5/8" long and connect to pin #4 of socket X3 and the solder lug at X3. Solder at solder lug only.

78. Connect Y35, a 7" wire, to terminal 3 on terminal strip X14 and pin 6 on socket X3. Train this wire along the chassis back between socket X3 and X2 to terminal strip X14 as shown in Figure 2. Do not solder.

79. Connect Y36, a 1 5/8" wire, between pin #5 of crystal socket X5 and the solder lug between G3 and G4, near X5. Solder at the solder lug only.

80. Connect C1, a .001 mfd molded mica condenser, between pin #3 of socket X5 and pin 6 of socket X3. Solder at X5 only. Cut the leads 1 1/8" long.

81. Connect Y37, a 3 1/8" wire, from pin 4 of socket X3 to pins 1 and 7 of socket X5. Strip the insulation 5/16" on the end that connects to X3 and 7/8" on the end that connects to pins 1 and 7 of X5. Bend #8 pin on X5 down so it does not touch this wire. Solder all three connections.

82. Connect Y38, a 4 1/2" wire, to terminal #1 of terminal strip X7 and to terminal #4 of SW2. Train this lead against the chassis and solder at the switch only.

83. Connect R4, a 200 ohm 1/2 watt resistor (color code red, black, brown, gold) with leads cut 1/2" long between terminals 1 and 2 of terminal strip X7. Do not solder.

84. Connect C18, a .005 mfd disc ceramic condenser with leads cut 1/2" long, between terminals #1 and #2 of terminal strip X7. Solder at terminal #2 only.

85. Connect R3, a 15,000 ohm 1 watt resistor (color code brown, green, orange, silver) between terminal #1 of terminal strip X7 and terminal #1 of terminal strip X9. Cut the resistor leads 5/8" long. Solder at X7 only.

86. Connect L2, a parasitic choke, between pin #3 of socket X2 and terminal #1 on terminal strip X9. Cut both leads 3/8" long. Solder at the socket X2 only.

87. Connect C5, a .0001 mfd molded mica condenser, between terminal #1 of terminal strip X9 and pin #8 of socket X3. Cut the leads 1/2" long. Solder at X9 only.

88. Cut the leads on C2, a .01 disc ceramic condenser, 5/8" long and connect to pins #3 and #5 on socket X3. Solder at pin #3 only.

89. Cut the leads on C22, a .00001 mfd mica condenser, to 5/8" and connect to pins #2 and 6 on socket X3. Solder at both ends.

90. Train Y10, the free wire coming through grommet G3, up and over to pin 8 of socket X3 and solder. This lead should be trained so it does not touch the components around socket X3.

91. Strip all the insulation from Y39, a 1 3/4" wire, and connect to pins #1 and #2 of socket X4 and to the solder lug near the center of the chassis. Solder at pin #2 and the solder lug only.

92. Cut the leads on the power transformer as follows - strip 5/16 ' insulation from the ends and tin (note these leads may be pre-cut to length):

a.	Black	16 1/2"
b.	Black	4 1/2"
c.	Green	2 3/4"
d.	Green	2 3/4"
e.	Yellow	5"
f.	Yellow	5"
g.	Red	4"
h.	Red	4"
i.	Red-Yellow	1 1/8"

93. Mount the power transformer in the position shown in Figure 6. Position the transformer so the yellow, red and red-yellow leads come through the hole near terminal strip X6. Fasten the transformer to the chassis with the following hardware at each mounting hole:
    a 8-32 x 5/16" screw from the top.
    b. Transformer
    c. Chassis.
    d #8 lockwasher.
    e. 8-32 hex nuts.

94. Connect the transformer leads as follows:
    a. The 16 1/2" black lead to terminal #1 of switch SW1. Train this lead toward the front of the chassis between fuseholder X15 and the chassis edge and along the front corner of the chassis to SW1. Solder at SW1.
    b. The 4 1/2" black lead to the front terminal of fuse holder X15 and solder. Train this lead parallel to the other black transformer lead
    c. One green lead to pin #1 of socket X4 and the other green lead to pin #7 of X4. Solder both connections.
    d. One yellow lead to pin #2 of socket X1 and the other yellow lead to pin #8 of X1. Solder at pin 2 only.
    e. One red lead to pin #4 of socket X1 and the other red lead to pin #6 of X1. Solder both connections.
    f. The red-yellow lead to the solder lug at terminal strip X6. Do not solder

95. Cut the plus lead of C16, an 8 mfd 700 volt tubular electrolytic condenser, 2 1/8" long and the negative lead 2 3/8" long. Connect the + lead to terminal #3 of terminal strip X6 and the negative lead to the solder lug under coil L4 mounting screw nearer the outside of the chassis. Do not solder. (Refer to Figure 5 for the position of C16). Train the plus lead to clear other components and the chassis at least 3/16".

96. Cut the plus lead on C15, and 8 mfd 700 volt electrolytic condenser, 1 1/2" long and the negative lead 1 1/4" long. Connect the plus lead to pin #8 of socket X1 and the negative lead to the solder lug under the coil L4 mounting screw nearer the outside of the chassis. Solder both connections. (Refer to Figure 5 for the position of C15.) The + lead should clear other components and the chassis at least 3/16".

97. Cut the leads on R8, a 25,000 ohm 10 watt resistor, to 1 1/2" and 1 1/4" long. Train the 1 1/2" lead through terminal #5 of terminal strip X6 and down to the solder lug at X6. Solder at both connections. Train the 1 1/4" lead through terminal #3 of terminal strip X14 and over to terminal #1. Solder at terminal #3 only.

98. Cut the leads on R7, a 20,000 ohm 10 watt resistor, 1/2" long. Connect one end to terminal #3 of terminal strip X6 and the other end to terminal #1 of X14. Solder both connections.

99. Cut the leads on R11, a 20,000 ohm 10 watt resistor, 3/4" and 1 1/4" long. Connect the 3/4" lead to terminal #2 of terminal strip X6 and the 1 1/4" lead to pin #2 of socket X2. Solder both connections. Position R11 as shown in Figure 5.

100. Cut one lead on C13, a .005 mfd disc ceramic condenser, 1/2" long. Leave the other lead full length. Train the long lead through the ground terminal of key jack X16 and over to pin #5 of socket X5 Connect the other end to the "tip" terminal of key jack X16. Solder only at the ground terminal and at socket X5.

101. Cut the leads on C19, a .005 ceramic disc condenser, 3/4" long and connect between terminal #1 on terminal strip X13 and the solder lug at socket X4. Do not solder.

102. Cut the leads on C20, a .005 disc ceramic condenser, 3/4" long and connect between terminal #3 on terminal strip X13 and the solder lug at socket X4. Solder at the solder lug only.

103. Train the power cord through grommet G5 near socket X4 and tie an overhand knot in the cord leaving approximately 1 1/2" leads extending from the knot (knot inside the chassis). Connect one lead to terminal #1 and the other to terminal #3 of terminal strip X13. Do not solder.

104. Wind RFC2, 20 turns of #20 plastic covered wire close wound on a 3/8" diameter form with one lead 3/8" long and the other 1 3/4" long. Carefully stretch this coil so its length is 2" long. (Stretch a little at a time, letting the coil spring back until it springs back to the 2" length.) Connect the 1 3/4" lead to pin #5 on socket X3 and the 3/8" lead to the "tip" terminal of key jack X16. Solder both connections.

105. Wind RFC3 the same as in step 104 but with leads 1/2" and 1" long. Connect the 1/2" lead to terminal #1 on terminal strip X13 and the 1" lead to the rear terminal on fuse holder X15. Solder both ends.

106. Wind RFC4 the same as in step 104 but with leads 1/2" long and 15 1/2" long. Connect the 1/2" long lead to terminal #3 on terminal strip X13 and solder. Train the 15 1/2" long lead down to the chassis, along the chassis between the fuse holder X15 and the chassis edge to the front of the chassis and parallel to the black transformer lead along the front corner of the chassis to switch SW1. Connect and solder to terminal #2 on SW1.

107 With a piece of cord, tie the two black transformer leads and the leads from RFC3 and RFC4 together near the rear terminal of fuse holder X15 to anchor them securely.

108. Strip the insulation on Y40, an 11" long wire, 5/16" on one end and 1" on the other. Connect the 5/16" end to the center connection of the antenna jack X12. Train this lead toward the front of the chassis, through grommet G2 up to condenser C11, through the rear stator terminal over to the front stator terminal and solder all three connections. Train this lead so it does not touch the chassis.

109. Connect Y41, a 1 3/4" wire, from the ground connection on the antenna jack X12 to the solder lug at the ground terminal. Solder at both ends.

110. Insert the pilot light bulb in the pilot light socket and the fuse (2 ampere) in fuse holder X15.

111. Assemble the knobs on the front panel as follows (the 8-32 set screws for the knobs are supplied with the hardware):
   a. Oscillator tuning, a skirted knob. With the condenser C4 at full mesh (maximum capacity), set the zero at the indicator mark. Tighten securely.
   b. Amplifier tuning, a skirted knob. With condenser C10 at full mesh, set the zero at the indicator mark. Tighten securely.
   c. Coupling, a plain knob with dot indicator. Set at #1 with condenser C11 at full mesh. Tighten securely.
   d. Bandswitch. Tighten the plain knob with dot indicator knob temporarily on the shaft and turn the switch to the stop in the counter-clockwise direction. Loosen the set screw and retighten with the dot indicator at 80.

112. Assemble four rubber mounting feet on the bottom of the cabinet, one in each of the ventilating holes nearest the corners, with the following hardware at each rubber foot:
   a. 6-32 x 3/8" screw from the bottom.
   b. Rubber mounting feet.
   c. Cabinet.
   d. #6 lockwasher.
   e. 6-32 hex nut.

113. Place the tubes in the transmitter as follows:
   a. V1, 5U4G rectifier tube in socket X1.
   b. V2, 807 amplifier tube in socket X2 (attach the plate cap to the top).
   c. V3, 6AG7 oscillator tube in socket X3.
   WARNING: The voltages encountered in this equipment are high enough to cause fatal injury. A ground should be connected to the chassis when testing or operating the transmitter. Always turn the transmitter off before making adjustments inside the transmitter and check to see that the filter condensers are discharged by shorting the B+ to ground after the power is turned off, using an insulated probe or wire for this purpose.

114. Before assembly of the transmitter in the cabinet, tests for correct wiring and operation should be made. Connect a good earth ground to the ground terminal near the antenna socket, plug the line cord into a 115 volt receptacle and turn the power switch on. The pilot light should light immediately. After a warm up period of about 30 seconds, check to see that the 5U4G and 807 tube filaments are lighted. Plug the key in the key jack, close it momentarily and note the meter reading with the meter switch in the "plate" position. This should be between 150 and 200 milliamperes. Do not keep the key closed under this condition since the 807 plate dissipation is being exceeded.

Refer to the "Tuning Procedure" and check the transmitter for proper operation, using a dummy antenna load instead of an antenna. (A 40 watt 115 volt incandescent light bulb makes a convenient dummy load for this transmitter. The light bulb should be connected to the antenna terminal with a coaxial cable or a "twisted pair". Eight to twelve inches is a convenient length for this.)

If trouble is experienced, recheck for correct wiring both from the instructions and the schematic circuit diagram. If a direct current voltmeter is available, the following voltage measurements may be helpful in locating trouble. These voltages will vary somewhat with the input line voltage.

Measure between:	Circuit function	Voltage	
		Key up	Key down (100 ma. load to final amplifier)
Terminal #3 of X6 and chassis	B+ voltage	650	450
Pin #2 of socket X2 and chassis	807 screen voltage	650	250
Plate cap on 807 and chassis	807 plate voltage	650	See note
Pin #8 of socket X3 and chassis	6AG7 plate voltage	650	See note
Pin #6 of socket X3 and chassis	6AG7 screen voltage	350	200 →

Note: Do not measure under key down condition since there is radio frequency voltage as well as D.C. voltage at these points under this condition.

TROUBLE SHOOTING

It is almost impossible to anticipate all troubles, operating errors, or component failures in the following listing. It is attempted, however, to list possible combinations that will aid in correcting trouble normally encountered in transmitter construction and operation.

A. Fuse blows when power switch is turned on.
   (1) Short circuit in either the primary or secondary transformer wiring. Check for correct wiring, referring to the schematic circuit diagram and the assembly instructions.

B. Pilot light and tube filaments do not light
   (1) Check transformer primary power.
   (2) Check for blown fuse.
   (3) Check filament wiring.

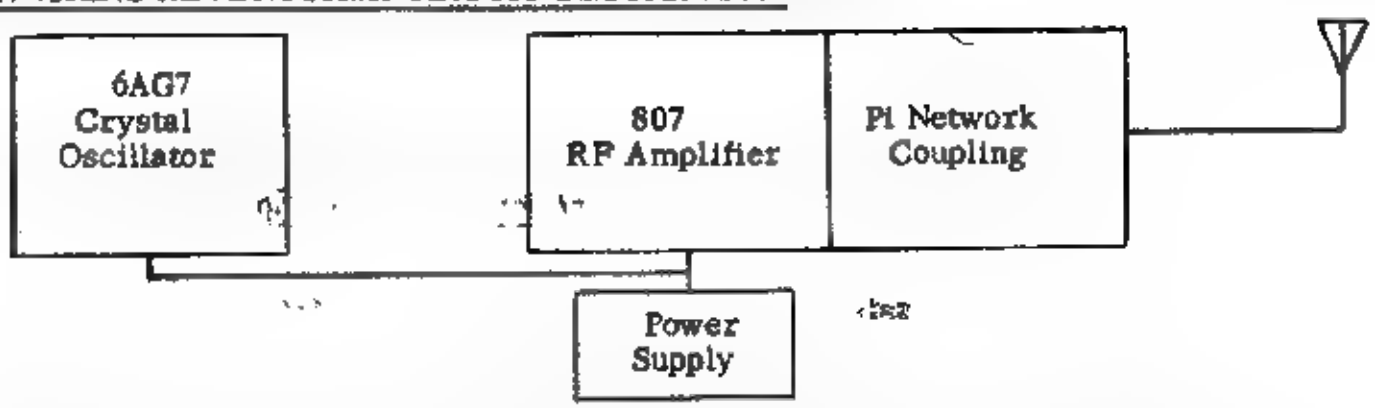
C No plate current when the key is closed Check B+ voltages, particularly at the 807 tube.

D. No grid drive.
   (1) Crystal may be dirty or faulty. Try a different crystal or cleaning the crystal.
   (2) Check plate voltage and the keying circuit on the 6AG7 oscillator.

E. No amplifier plate current dip with load, or unable to load the final.
   (1) Check ground and antenna (or dummy load) connections
   (2) Read and understand the section on pi network tuning, harmonic suppression and antenna systems since this may be the result of the load impedance being outside the tuning range of the pi network After the transmitter has been tested satisfactorily, proceed with the assembly of the cabinet on the transmitter.

115. Assemble the cabinet, CH4, on the transmitter from the back with the power cord through the square hole Fasten the cabinet to the front panel using fourteen thread forming screws through the flange on the front panel and four thread forming screws through the rear of the cabinet. Use the following hardware sequence:
   a. 6-32 x 5/16" thread forming screw.
   b. #6 lockwasher.
   c. Front panel (cabinet for the four screws on the back).
   d. Cabinet (chassis for the four screws on the back).

   Note: This assembly operation may be made easier by starting the screws in the cabinet and back of the chassis before assembling the cabinet on the transmitter, to form the threads.



The 6AG7 operates as a pierce crystal oscillator with an electron coupled tank. This is capacity coupled to the grid of the 807 amplifier through coupling condenser C5. Since more than adequate drive for the 807 is available on the lower frequencies, R13 is added across the coil to reduce the drive on these frequencies. The oscillator becomes an amplifier or frequency multiplier when a VFO is used.

The final amplifier uses an 807 with a band-switched pi network plate circuit This network will match unbalanced antenna impedances in the range of 50 to 600 ohms and will also tune out a wide range of inductive or capacitive reactance,

GROUNDING:

Before attempting to tune the transmitter and load it either into a dummy load or an antenna, the chassis should be grounded. This is necessary, not only as a safety precaution, but to insure that the chassis be at zero RF potential for effective TVI suppression and for efficient antenna loading.

The ground connection should be made from the screw provided on the back of the chassis, using a heavy conductor wire (#16 or larger) to a good earth ground. This wire should be as short as possible and may be to a water pipe, a copper rod driven into the ground approximately 6 ft. or similar earth connection. If the transmitter chassis becomes "hot" with RF under operation condition, try different lengths of ground wire and/or different grounds until this is eliminated.

A rough check on the effectiveness of the transmitter ground may be made by touching the chassis while watching the amplifier plate current with the transmitter operating into an antenna. A change in the current upon touching the chassis is indicative of an ineffective ground. A neon bulb may under some conditions glow when touched to the chassis, thus indicating that the chassis is at high RF potential.

TUNING PROCEDURE:

CAUTION: UNDER SOME ANTENNA LOADING CONDITIONS, IT MAY BE POSSIBLE TO DOUBLE IN THE AMPLIFIER STAGE THUS PRODUCING OUTPUT ON THE SECOND HARMONIC FREQUENCY RATHER THAN THE DESIRED FUNDAMENTAL FREQUENCY. SUCH OPERATION SHOULD BE AVOIDED, PARTICULARLY ON 80 METERS, TO PREVENT OUT-OF-BAND OPERATION. "AMPLIFIER" TUNING SHOULD BE CAREFULLY CHECKED FOR TWO PLATE CURRENT DIP POINTS ON THE TUNING DIAL. IF TWO DIP POINTS ARE FOUND WITHIN THE 0 TO 100 DIAL CALIBRATION, THE LOWER NUMBER DIAL SETTING

(LOWER FREQUENCY) SHOULD BE USED. IN ADDITION BE CERTAIN THAT

"AMPLIFIER" TUNING DIAL IS SET AT "0" WHEN THE CAPACITOR IS AT FULL

MESH POSITION !

The tuning of the Viking Adventurer is the same for all bands. Refer to the table below for the approximate dial settings and crystal (or VFO) frequency for the various settings of the bandswitch. With the meter switch in the "grid" position, close the key and tune the "oscillator" for maximum grid current as indicated by the milliammeter. Then with the meter in the "plate" position, tune the "amplifier" for minimum plate current (plate current "dip") Next the coupling should be increased in small increments, retuning the amplifier to minimum plate current after each change of the coupling control. The coupling should be increased to the point where the "dipped" plate current is 110 milliamperes. If proper loading is not obtained when the coupling has been rotated 180 degrees to coupling position #10, turn it back to #1, move the coupling to "MAX" and proceed as above, "dipping" the amplifier tuning to minimum after each adjustment of coupling. Note: Dipping the amplifier to minimum plate current must always be the last tuning adjustment.

Approximate dial readings for the oscillator and amplifier under no load conditions are given in the following table:

Output frequency (Band-switch setting)	Crystal or VFO Frequency	Oscillator Tuning	Amplifier Tuning	Coupling Control	Switch
80 meter band	80 meters	40	40	1	Min
40 meter band	80 or 40 meters	35	70	1	Min
20 meter band	40 meters	50	75	1	Min
15 meter band	40 meters	40	90	1	Min
10 meter band	40 meters	50	85	1	Max

Note: The coupling switch should be at "MAX" on the ten meter band.

The following step by step tuning is given as a further help in learning to tune the Viking Adventurer properly.

1. First make sure the power cord is plugged into a 115 volt A.C. outlet, the key plugged into the key socket and, if the amplifier is to be loaded, the antenna or dummy antenna is connected. As explained previously a good ground should always be connected when testing or operating the transmitter.
2. Turn the bandswitch to the desired band.
3. Set the oscillator, amplifier, and coupling controls to their approximate positions as indicated in the above table and plug the crystal into the crystal socket.
4. Turn the power switch on and allow approximately 30 seconds for the tubes to warm up before closing the key. (If the key has a shorting switch, check to be sure it is open.)
5. Place the meter switch in the "grid ' position, close the key and tune the oscillator for maximum grid current indicated by the meter. Caution: Do not hold the key down for long periods of time without tuning the amplifier to resonance as indicated in Step #6.
6. Switch the meter to "plate" and dip the amplifier (tune the amplifier to minimum plate current).
7. Load the amplifier into the antenna (or dummy load) by increasing the coupling in small steps, dipping the amplifier after each coupling adjustment, until the "dipped" plate current is 110 milliammeters. Always "dip" the amplifier tuning after any other tuning adjustment.

VIKING ADVENTURER PI-NETWORK TUNING, HARMONIC SUPPRESSION AND ANTENNA SYSTEMS

The pi tuning/coupling network in the Viking Adventurer is designed to load the final amplifier into antenna resistances of nominally 50 to 600 ohms throughout the frequency range of the transmitter. In addition, it is capable of "tuning out" series antenna reactances up to several hundred ohms to complete a good match to most unbalanced antenna systems.

When the transmitter is well grounded and properly tuned, the higher harmonic suppression is excellent, generally much better than with other conventional methods of antenna coupling. This should be of interest to amateurs afflicted with TVI or other high frequency interference problems. In some cases when operating on the higher frequencies, a low pass filter such as the Johnson 250-20 may be necessary for additional harmonic attenuation.

To obtain proper tuning, coupling and harmonic suppression with any transmitter antenna coupling system, the part of the circuit designed to operate at RF ground potential must be at RF ground potential. A "room full of RF" is evidence that a high RF potential exists on something in or near the room. In many cases the source of RF is the transmitter's chassis and power cord. This condition is very undesirable for several reasons. Three objectionable factors which obviously affect the loading of the transmitter when poor grounds are involved are:

a. The impedance that the output terminal of the transmitter looks into includes not only the true antenna to ground impedance as presented by the antenna feedline but also the transmitter chassis to ground impedance. This additional impedance in some cases will raise the apparent antenna impedance to such a high value that it cannot be loaded by the pi network.

b Part of the transmitter's power is lost in the ground system due to radiation of the ground lead, power cord or cabinet. This power is quickly dissipated in surrounding objects and contributes nothing to effective radiated power except to distort the antenna's normal field pattern.

c It is conventional, in designing a transmitter, to bypass harmonics or any possible sources of stray high frequency currents to the chassis on the assumption the chassis will be kept as near ground potential as possible. When a high impedance is presented to these currents at the chassis, they are able to radiate to some extent rather than be passed harmlessly to ground.

With the transmitter chassis well grounded, correctly designed antenna systems having relatively "flat" unbalanced feeder systems, can easily be loaded by following the tuning instructions given, provided the antenna terminal impedances fall within the range of the pi network. Feeding a balanced system with a feedline over a quarter of one wavelength long, may prove to be surprisingly successful if the transmitter chassis is held at ground potential. The transmission line between the transmitter and antenna will tend to assume a partial balance at the antenna. Some standing waves will result but may not be excessive.

Antennas having random lengths, random feed points and various types of feed lines will exhibit widely different resistance and reactance characteristics. It is well to remember that the feedline is a very important part of the system. A common example of the random antenna is a horizontal wire fed by a single wire feed line. The feed line in this case actually becomes part of the radiating system. An antenna of this type can, in most instances, be fed by the pi network directly but there are critical dimensions where the antenna series reactance (inductive or capacitive) becomes too high and the antenna resistance can become either too high or too low to be matched by the pi network.

Several things can be tried in an effort to bring the antenna system into the tuning range of the pi network:

a Change the length of the feeder line between the antenna and transmitter experimentally 1/8 to 1/4 wavelength.

b. Change the point of connection of the feedline to the antenna 1/8 to 1/4 wavelength.

c Change the antenna length 1/8 to 1/4 wavelength Antennas shorter than 1/8 wavelength (antenna and feeder) may be difficult to load. They present a high capacitive reactance to the transmitter output terminals. Effective antenna lengths in the vicinity of 1/2 wavelength will in general exhibit characteristics of high resistance, high reactance (inductive or capacitive), or both when end fed.

d. "Load" the antenna feeder by placing an inductor or capacitor in series to cancel out the reactance of the antenna feeder. This may require considerable cut and try and will affect only the reactive component of the antenna impedance. However, it can prove useful in some cases.

It is difficult to specify antennas that will be suitable for any installation because of the different requirements. An antenna that has been found satisfactory on all bands is a single wire 75 ft. long measured from the transmitter antenna terminal. As much of this antenna should be kept clear of other objects such as trees, buildings, power lines, etc., and as high as possible. The ground lead is part of the system and therefore should be no longer than necessary. In cases where a long ground is unavoidable, when operating on a second or third floor of a building for example, it may be necessary to adjust the overall length of the antenna to compensate for this additional length. Adjustments in antenna length in steps of 2 to 3 feet can be easily made to compensate for the affects of surrounding objects and ground lead length to bring this antenna into the tuning range of the pi-network.

Antennas fed with a non-radiating transmission line usually give better results since the entire antenna will be high and can be erected so that it is away from trees, buildings, etc. An antenna of this type that will work well with the Viking Adventurer and that is easy to construct and erect is the Half-Wave doublet antenna. This antenna consists of a straight wire one-half wavelength long with a 50-70 ohm coaxial transmission line connected to the center. The transmission line length is not critical. However, since this is an unbalanced line feeding a balanced antenna, some standing waves will be present which might make it necessary to adjust the length of the coaxial line to bring it into the tuning range of the pi-network.

A complete discussion on antennas cannot be made here, and since this is one of the most important elements in a transmitting system, reference should be made to the Amateur Handbook, the Antenna Handbook or similar publications on antennas for more detailed information on antennas and transmission lines.

VFO EXCITATION:

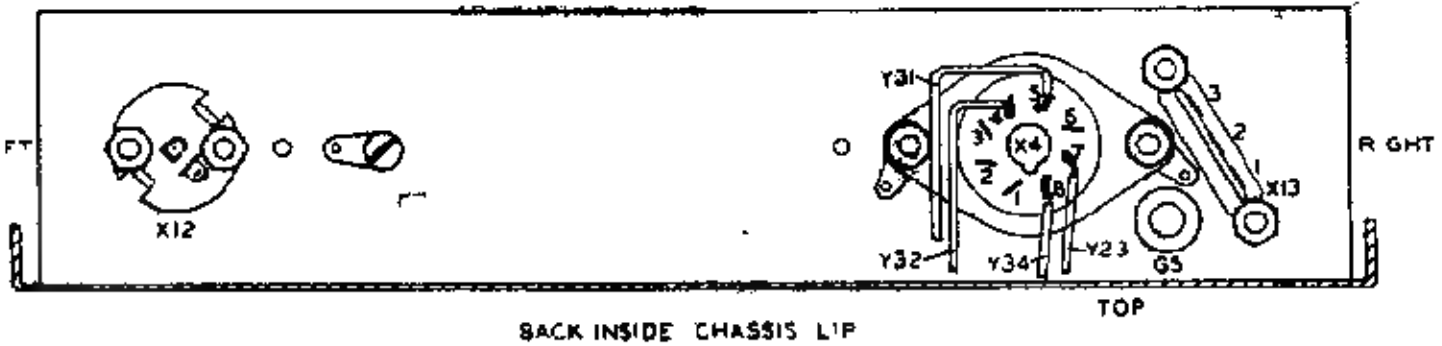
The Johnson Adventurer is designed for VFO input as well as crystal operation. The VFO input is to the left of the crystal socket on the front panel and requires a two pin plug (Millen type 37412 or equivalent). If one side of the transmission line from the VFO is grounded such as the shield on a coaxial line, this ground side should be connected to the top pin of the VFO input socket. The output of the VFO should have a 50 to 150 mmfd isolation capacitor in the grid lead (bottom VFO pin) to avoid placing a DC short on the input grid.

If the Johnson Viking Model 240-122 VFO is used, a 10K ohm 4 watt resistor should be connected between pins #3 and #4 on the power socket (this may be two 20K ohm 2 watt resistors in parallel, two 5000 ohm 2 watt resistors in series or a single 10K 4 watt resistor) R51, the 18K 2 watt resistor in the VFO, should be changed to a 20K ohm 10 watt resistor. These changes are required for correct operating voltages and power dissipation for the VFO. The lead from pin 8 of PL51 should be changed at the key jack J50 so that it will be connected to the ungrounded side of C69 (at key jack). After these changes have been made, the VFO power plug may be inserted in the socket at the rear of the transmitter and the RF output from the VFO connected to the VFO socket (the center coaxial conductor to the bottom VFO input pin). Since the keying circuit is connected to the VFO keying circuit through the power plug, the key should be plugged into the VFO. This keys both the VFO and the transmitter

MODULATION:

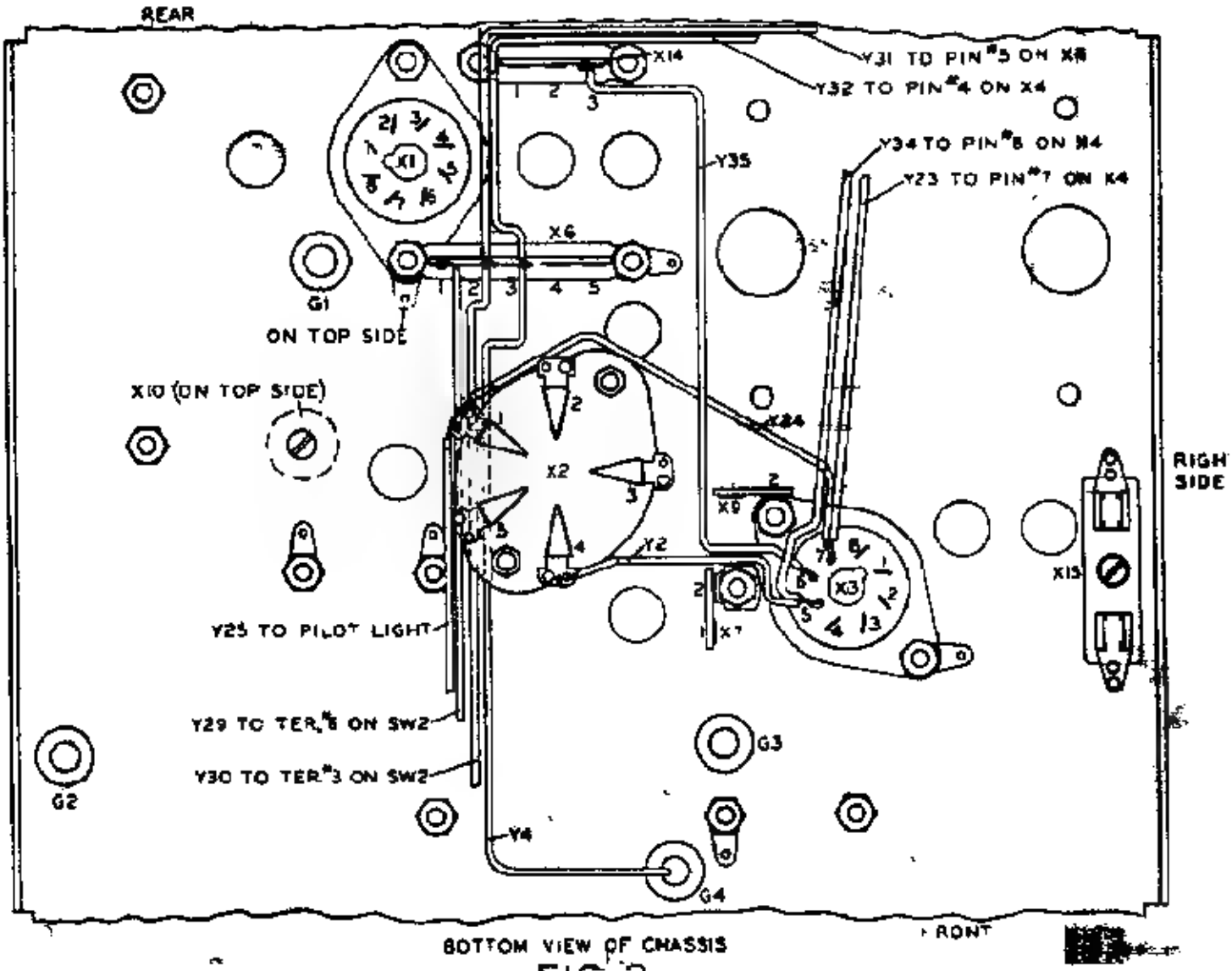
To modulate the Viking Adventurer Transmitter for phone operation, 25 watts of audio power is required. This should be applied to the transmitter with a modulation transformer having a secondary impedance of 4000 ohms. The jumper wire between pins 4 and 5 of the power socket X4 should be removed so that the B+ to the final is fed through the modulation transformer by connecting tq this socket with an octal plug. Refer to the amateur handbook for further information on speech amplifiers and modulators and their adjustment.

CAUTION: UNDER SOME ANTENNA LOADING CONDITIONS, IT MAY BE POSSIBLE TO DOUBLE IN THE AMPLIFIER STAGE THUS PRODUCING OUTPUT ON THE SECOND HARMONIC FREQUENCY RATHER THAN THE DESIRED FUNDAMENTAL FREQUENCY. SUCH OPERATION SHOULD BE AVOIDED, PARTICULARLY ON 80 METERS, TO PREVENT OUT-OF-BAND OPERATION. "AMPLIFIER" TUNING SHOULD BE CAREFULLY CHECKED FOR TWO PLATE CURRENT DIP POINTS ON THE TUNING DIAL. IF TWO DIP POINTS ARE FOUND WITHIN THE 0 TO 100 DIAL CALIBRATION, THE LOWER NUMBER DIAL SETTING (LOWER FREQUENCY) SHOULD BE USED. IN ADDITION BE CERTAIN THAT "AMPLIFIER" TUNING DIAL IS SET AT "0" WHEN THE CAPACITOR IS AT FULL MESH POSITION!



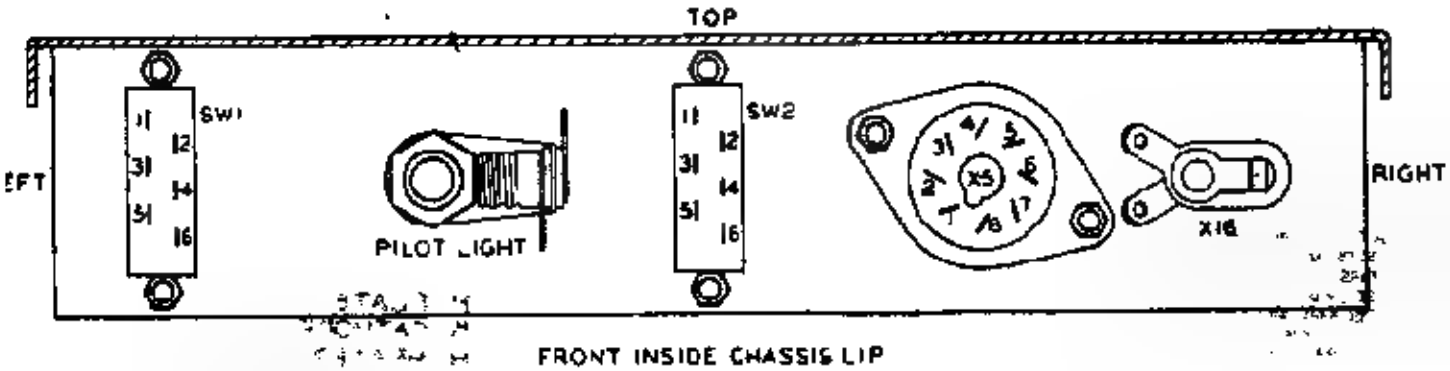
BACK INSIDE CHASSIS LIP

FIG. 1



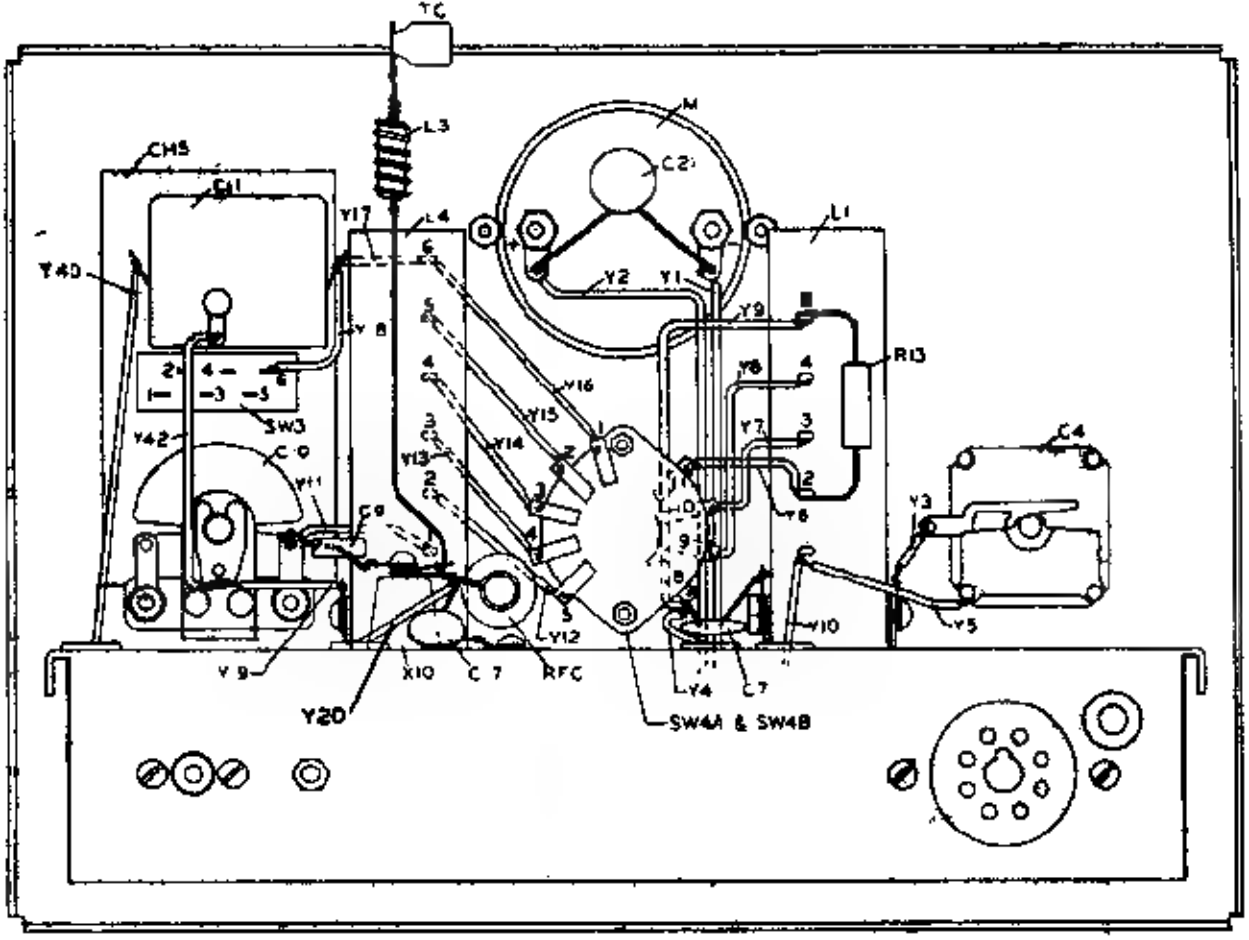
BOTTOM VIEW OF CHASSIS

FIG. 2



FRONT INSIDE CHASSIS LIP

FIG. 3



INSIDE BACK VIEW WITHOUT POWER TRANSFORMER "T" AND CHOKE "LP1"

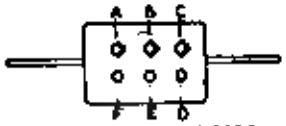
FIG. 4

COLOR	SIGNIFICANT FIGURE	DECIMAL MULTIPLIER	TOLERANCE (%)	VOLTAGE RATINGS*
BLACK	0	1		
BROWN	1	10	1	100
RED	2	100	2	200
ORANGE	3	1,000	3	300
YELLOW	4	10,000	4	400
GREEN	5	100,000	5	500
BLUE	6	1,000,000	6	600
VIOLET	7	10,000,000	7	700
GRAY	8	100,000,000	8	800
WHITE	9	1,000,000,000	9	900
GOLD	-	0.1	5	1,000
SILVER	-	0.01	10	2,000
NO COLOR	-	—	20	500

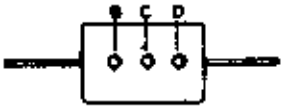
* APPLIES TO CONDENSERS ONLY

COLOR CODING OF FIXED RESISTORS

A-FIRST SIGNIFICANT FIGURE OF RESISTANCE IN OHMS
B-SECOND SIGNIFICANT FIGURE
C-DECIMAL MULTIPLIER
D-RESISTANCE TOLERANCE IN PERCENT IF NO COLOR SHOWN TOLERANCE IS ±20%

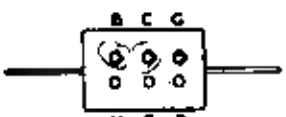


JAN FIXED CAPACITORS



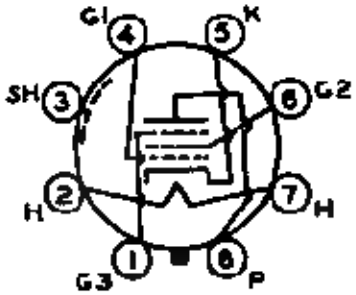
RMA 3-DOT CODE 500VOLT ± 20%

COLOR CODING OF FIXED CONDENSERS
A-TYPE: MICA BLACK, PAPER SILVER
B-FIRST SIGNIFICANT FIGURE OF CAPACITY
C-SECOND SIGNIFICANT FIGURE
D-DECIMAL MULTIPLIER
E-TOLERANCE
F-CHARACTERISTIC
G-THIRD SIGNIFICANT FIGURE
H-VOLTAGE RATING

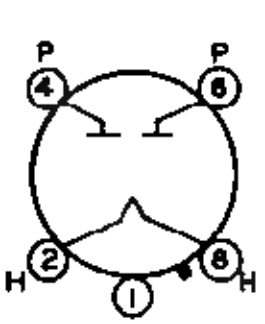


RMA 6-DOT CODE

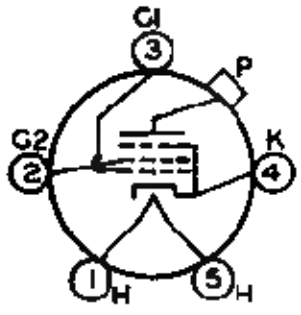
CONDENSER-RESISTOR COLOR CODE



6AG7



5U4G



807

P PLATE
K CATHODE
H HEATER
G1 CONTROL GRID
G2 SCREEN GRID
G3 SUPPRESSOR GRID
SH SHIELD OR SHELL

TUBE SOCKET CONNECTIONS BOTTOM VIEW

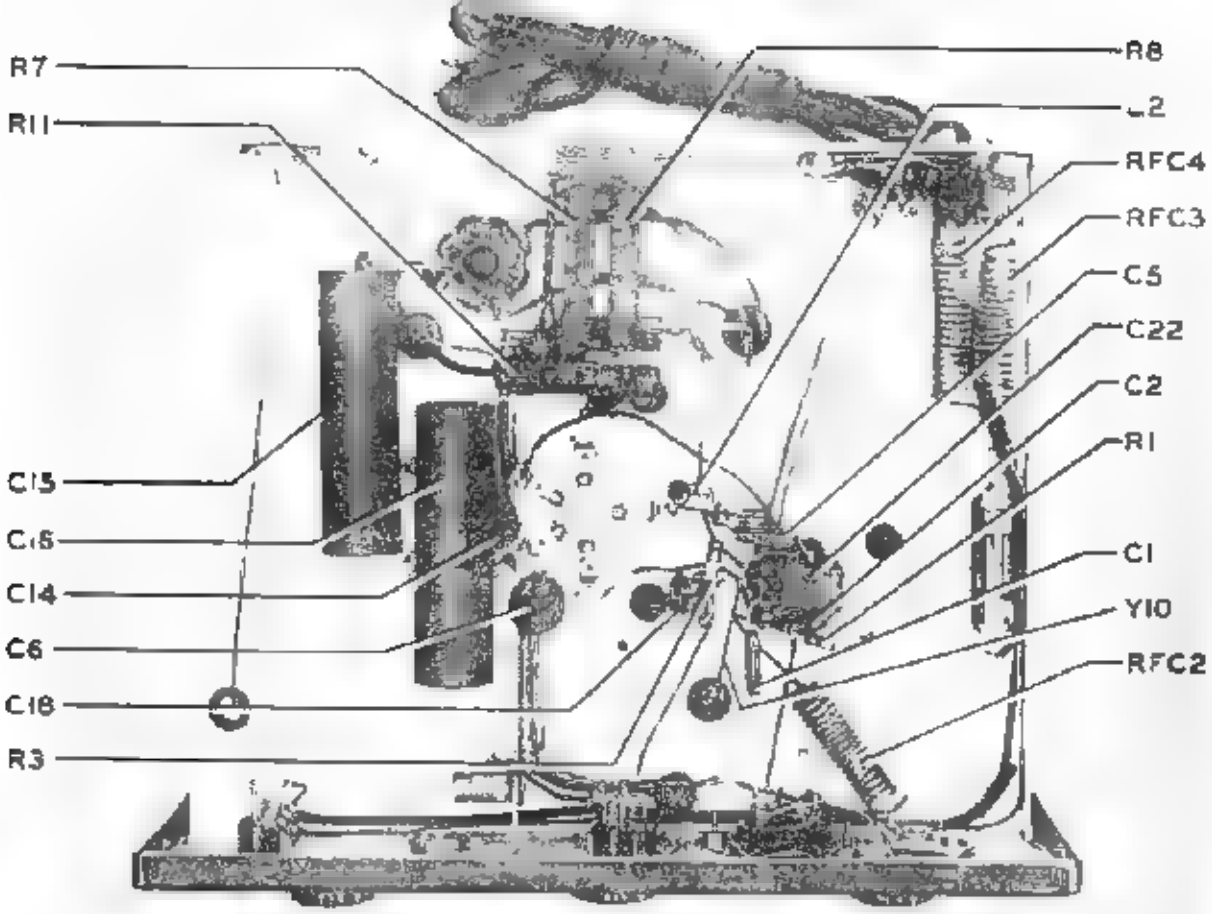

R7
R11
C15
C16
C14
C6
C18
R3
R8
L2
RFC4
RFC3
C5
C22
C2
R1
C1
Y10
RFC2

FIG.5

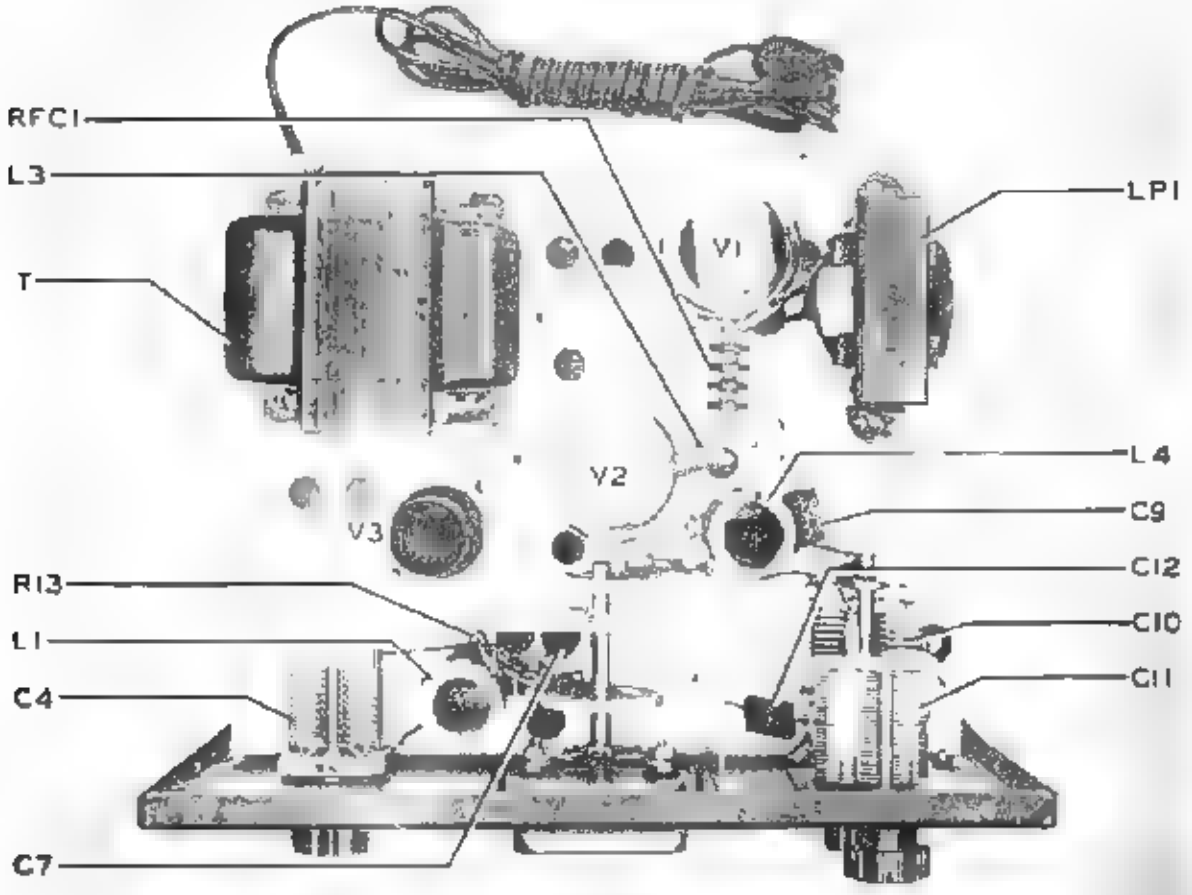

RFC1
L3
T
V1
LP1
V2
V3
L4
C9
C12
C10
C11
R13
L1
C4
C7

FIG.6

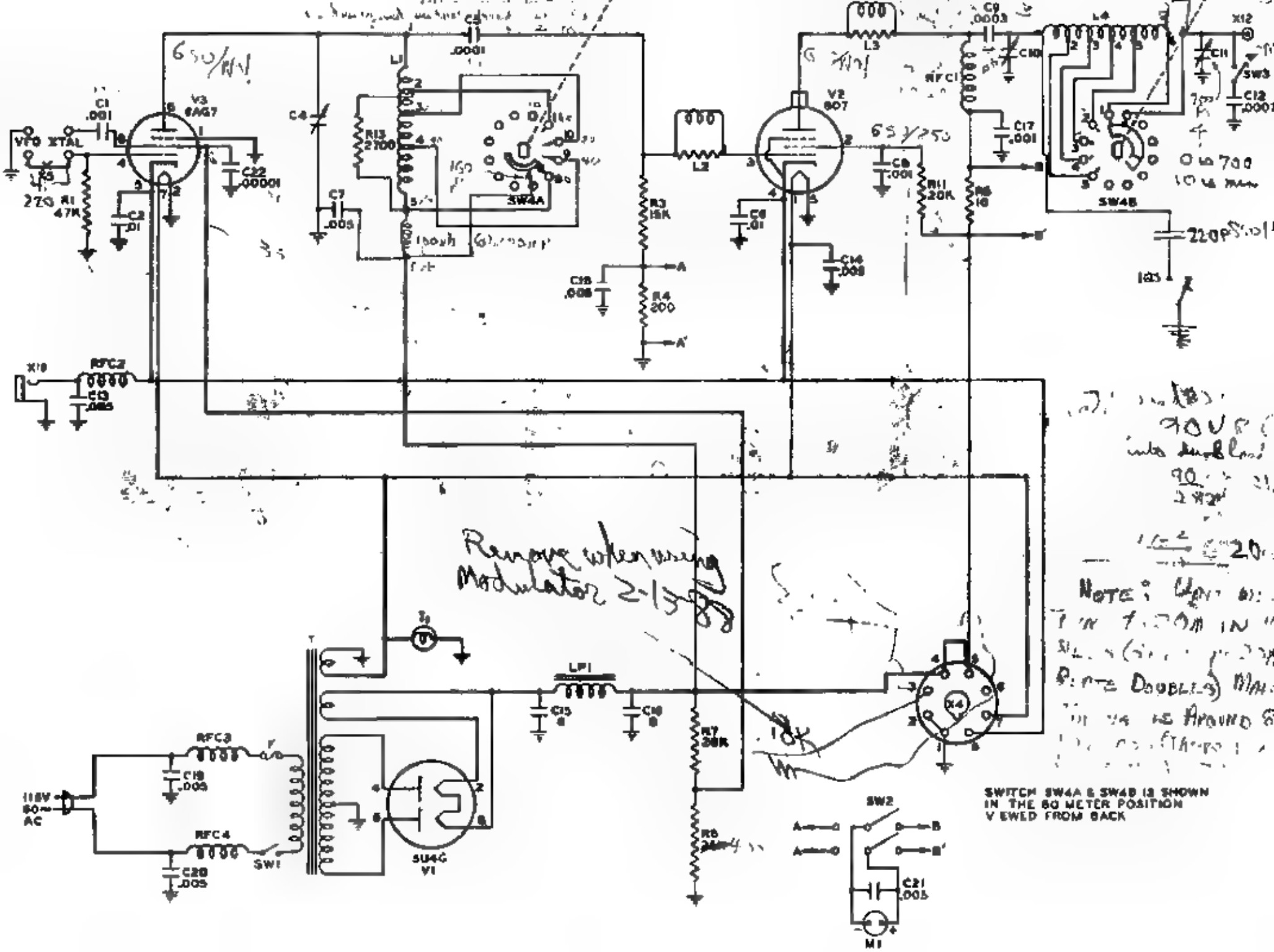

V3 6AG7
V2 807
L1
L2
L3
L4
C1 .001
C2 .01
C4
C5 .0001
C7 .005
C8 .01
C9 .0003
C10
C11
C12 .0001
C14 .008
C15 .008
C17 .001
C22 .00001
R1 47K
R3 15K
R4 200
R11 20K
R13 2100
SW4A
SW4B
SW3
220PF
VFO XTAL
X10
RFC2
C3 .005
RFC1
Remove when using Modulator 2-1-58
LP1
C15
C16
R7 30K
X4
RFC3
C18 .005
RFC4
C20 .005
SW1
118V 60~ AC
5U4G V1
SW2
C21 .005
M1
SWITCH SW4A & SW4B IS SHOWN IN THE 80 METER POSITION VIEWED FROM BACK

FIG. 7

160 m without any change in L
from 80 m position if 220 μμf is added
across L. ... from master Viking Adventurer
chart $X_C = X_L = 419$ ohms with 220 μμf added at 2 MHz

According to calculation there is approximately 10-15 μh in 80 m pos. ... found

Wooden coil form two layers ... 32 ... approx 75 μh/layer. ½ layer is 21.5 ... ⅓ layer is 17.7 μh ... formula in ... handbook $L = \frac{a^2 n^2}{9a + 11b}$ μh ...

Parts List

Part No. or Drawing No.	Item No.	Qty.	Description
17.926	CH1	1	Chassis
17.927	CH2	1	Shield
17.925-3	CH3	1	Front Panel
23.1105	CH4	1	Cabinet
17.930	CH5	1	Switch mounting plate
13.49-8	D1	2	Spacers (1 1/16 long)
22.632-1	D2	4	Mounting feet
23.1007-5	D3	2	Knobs
23.907-22	D4	2	Knob (100-0 dial)
22.113-1	G1-5	5	Rubber grommets (9/16 O.D.)
22. 849	X1, 3-5	4	Octal socket
122-225	X2	1	5 pin steatite socket
22.740-5	X6	1	Terminal strip (5 terminals)
22.837	X7, 9	2	Terminal strip (2 terminals)
135-500	X10	1	Insulator
22.1095	X11	1	Phono type plug
22.1096	X12	1	Phono type socket
22.740-3	X13, 14	2	Terminal strip (3 terminals)
22.1094	X15	1	Fuse holder
22.980	X16	1	Key jack
23.546-1		1	Bracket assembly
23.545-13		1	Jewel
22.921	SW1-3	3	Slide switch
22.1093	SW4	1	Band switch
22.1103-2	M1	1	0-10 milliammeter
71.91-102		30 ft.	Wire
22.805	C1	1	1000 mmfd mica condenser
22.1097	C2, 6	2	.01 mfd disc ceramic condenser
22.827	C7, 13, 14, 18-21	7	.005 mfd disc ceramic condenser
167-104-2	C4	1	75 mmfd type "L" variable condenser
22.1138	C5	1	100 mmfd mica condenser
22.828	C8, 17	2	.001 mfd 1500 V disc ceramic condenser

Viking Adventurer

Parts List

Part No. or Drawing No.	Item No.	Qty.	Description
22.1139	C9	1	300 mmfd mica condenser
149-10-3	C10	1	250 mmfd type "R" variable condenser
22.1102	C11	1	700 mmfd variable condenser
22.861	C12	1	700 mmfd mica condenser
22.1098	C15,16	2	8 mfd 700 V electrolytic condenser
22.856	C22	1	10 mmfd mica condenser
22.5089-10	R1	1	47 K ohms 1/2 W carbon resistor
22.6077-10	R3	1	15 K ohms 1 W carbon resistor
22.5032-5	R4	1	200 ohms 1/2 W carbon resistor
22.5001-5	R5	2	10 ohms 1/2 W carbon resistor
22.8911-5	R7,11	2	20 K ohms 10 W power resistor
22.8914-5	R8	1	25 K ohms 10 W power resistor
22.6059-10	R13	1	2700 ohms 1 W carbon resistor
23.1094	L1	1	Oscillator coil
23.1015	L2,3	2	Parasitic choke
23.1093	L4	1	Amplifier coil
22.951	RFC1	1	2.5 MH RFC
22.749	LP1	1	Filter choke
22.1101	T	1	Power transformer
22.1257	F	2	Fuse 2 amp 3AC type
22.743	I1	1	Pilot Light #40 6-8 volt min. screw bulb
16.35	TC	1	Tube Cap
22.741		1	Line Cord
22.1104	V1	1	Type 5U4G vacuum tube (or 5U4GA)
22.783	V2	1	Type 807 vacuum tube
22.1105	V3	1	Type 6AG7 vacuum tube
1 envelope			#4 and #8 hardware
1 envelope			#6 hardware
1 envelope			Miscellaneous hardware

E. F. JOHNSON COMPANY, VIKING EQUIPMENT QUESTIONNAIRE

Your cooperation in returning this questionnaire along with your warranty cards to the E. F. JOHNSON COMPANY at your earliest convenience will help us in designing our future amateur equipment.

NAME _____ CALL _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

1. EQUIPMENT _____ SERIAL NO. _____ DATE OF DELIVERY _____
2. DISTRIBUTOR FROM WHOM PURCHASED? _____
3. WAS THE EQUIPMENT DELIVERED FROM YOUR DISTRIBUTOR'S STOCK? _____
4. IF NOT, HOW LONG DID YOU WAIT FOR DELIVERY? _____
5. WAS THE EQUIPMENT A KIT? _____ OR FACTORY WIRED AND TESTED? _____
6. WAS THE WORKMANSHIP SATISFACTORY? _____
7. WERE THERE ANY OBVIOUS DEFECTS? _____
8. WERE THERE ANY SHORTAGES? _____
9. WAS THERE ANY SHIPPING DAMAGE? _____
10. WAS ANY DIFFICULTY EXPERIENCED IN PLACING THE UNIT ON THE AIR? _____
11. ARE THE COLORS USED ON THE CABINET AND PANEL PLEASING? _____
12. IS THE PANEL LAYOUT PLEASING? _____
13. ARE THE CONTROLS CONVENIENT TO USE? _____
14. ARE YOU ENTIRELY SATISFIED WITH YOUR UNIT AND ITS PERFORMANCE ON THE AIR? _____
15. IF NOT, EXPLAIN. _____
16. WHAT FEATURES DO YOU FIND THE MOST DESIRABLE IN THIS UNIT? _____
17. WHAT FEATURES DO YOU LIKE LEAST IN THIS UNIT? _____

18. WHAT IMPROVEMENTS WOULD YOU RECOMMEND IN THIS UNIT?_____

19. DO YOU OBTAIN INFORMATION ON NEW EQUIPMENT FROM
ADVERTISING IN QST____ CQ____ OTHER MAGAZINES_____
EXAMINING EQUIPMENT IN A STORE_____
OTHER AMATEURS_____

20. HOW DID YOU BECOME INTERESTED IN THIS NEW PIECE OF EQUIPMENT?_____

21. WHAT TYPE OF ANTENNA (S) DO YOU USE?_____

22. ARE YOU USING AN ANTENNA COUPLER?_____TYPE_____

23. ARE YOU USING A DIRECTIONAL COUPLER AND INDICATOR?____TYPE_____

24. WHAT OPERATING ACCESSORIES (SUCH AS MONITORS, CALIBRATORS, PHONE PATCHES, ETC.) DO YOU USE?_____

25. WHAT MAKE AND MODEL OF RECEIVER DO YOU USE?_____

26. WHAT PERCENTAGE OF TIME IS SPENT OPERATING LOW POWER?_____
HIGH POWER?_____

27. WHAT PERCENTAGE OF TIME IS SPENT OPERATING SSB?____ AM?____ CW?____

28. WHAT PERCENTAGE OF OPERATING TIME IS SPENT ON THE FOLLOWING? DX___
RAGCHEWING_____ CONTESTS_____ EXPERIMENTING_____

29. WHAT PERCENTAGE OF TIME DO YOU OPERATE ON THE FOLLOWING BANDS?
160_____ 80_____ 40_____ 20_____ 15_____ 10_____ 6_____ 2_____
MARS_____ OTHERS_____

30. HOW DO YOU RATE JOHNSON EQUIPMENT IN TERMS OF:

QUALITY	GOOD_____	FAIR_____	POOR_____
VALUE	GOOD_____	FAIR_____	POOR_____
PERFORMANCE	GOOD_____	FAIR_____	POOR_____
APPEARANCE	GOOD_____	FAIR_____	POOR_____

31. WHAT AMATEUR TRANSMITTER DO YOU BELIEVE TO BE THE BEST BUY ON THE MARKET, CONSIDERING ITS PRICE, POWER, QUALITY AND FEATURES?_____

32. WHAT ADDITIONAL ITEMS OF AMATEUR EQUIPMENT WOULD YOU LIKE TO SEE ON THE MARKET AND WHAT WOULD YOU CONSIDER A REASONABLE PRICE FOR EACH ITEM?_____

33. ADDITIONAL COMMENTS._____

THANK YOU!